

Editorials

California's 1988-1991 Measles Epidemic—The Last One?

ELSEWHERE IN THIS ISSUE, Chavez and Ellis document the severe effects of California's 1988-1991 measles epidemic.¹ Several other investigations of this epidemic have chronicled its extraordinary toll.²⁻⁶ The epidemic resulted in more than 18,000 reported cases, 3,500 hospital admissions, and 70 deaths. In large part, as Chavez and Ellis note, this was an epidemic among unimmunized, economically disadvantaged minority infants and young children. More than half of the patients were younger than 5 years, 84% were unimmunized, and at least half were Latino, African American, or Asian. The epidemic was not restricted to children, however; more than 4,000 adults were stricken.

As Chavez and Ellis aptly point out, the epidemic reminds us that measles can be a serious disease producing severe complications and lengthy, costly hospital stays. More than 10% of patients had diarrhea, many to the point of substantial hypovolemia. Pneumonia developed in nearly 10%, with some of these cases progressing to the adult respiratory distress syndrome (ARDS) and requiring prolonged ventilatory support. Most of the deaths resulted from this latter complication.

The high morbidity and mortality rates can be partially explained by the fact that more than 80% of the cases occurred in infants, toddlers, or adults—the ages at which measles infection is most severe—and by the extraordinary frequency of severe complications observed among Samoan and Hmong infants and young children. Further, a vivid demonstration of the danger posed by measles to medical staff is that in this epidemic more than 150 cases were reported among medical staff; 3 of these died, 1 was left paralyzed, and another recovered only after severe ARDS developed that required ventilatory support for several weeks.

The financial effects of the epidemic were substantial, with direct medical care and outbreak control costs alone estimated at \$31 million.² Analyzing data on pediatric hospital admissions, Chavez and Ellis found that the average hospital stay was 4.6 days and the average hospital cost was \$8,200. They also note that two thirds of this cost was incurred by Medi-Cal (California's Medicaid) beneficiaries. The brunt of the fiscal effects was borne directly by the taxpayers.

The key to preventing the recurrence of measles epidemics of this type is to raise the immunization coverage of preschool-aged children. Measles immunization is recommended for all children at 12 to 15 months of age. Unpublished surveys conducted by the California Department of Health Services, however, indicate that at the time of this epidemic, less than half of California children were immunized against measles on time. In fact, by age 24 months (almost a year older than the recommended age), only 70% had been immunized.

To explore further the causes of the epidemic, the California Department of Health Services conducted an ecologic study of relationships between demographic features and measles incidence rates among children younger than 5 years for the California counties affected by this epidemic.⁶ Three independent predictors of high measles incidence by county were identified with the use of a stepwise multivariate regression analysis. The first of these was the percentage of county population younger than 5 years. This finding supports the obvious point that a large population of preschoolers with low immunization coverage increases the risk of measles outbreaks. The other two independent predictor variables of a high measles incidence were factors related to access to immunizations: a high number of poor children per government third-party-payer provider (that is, Child Health and Disability Prevention, or CHDP, and CHDP-Medi-Cal programs in California) and the high number of poor children per public health immunization site. This finding strongly suggests that a limited supply of primary and preventive health care professionals in relation to the number of poor children in a community increases the epidemic risk.

In the years since the epidemic, considerable resources have been committed in California and the rest of the United States to raise immunization levels among preschool-aged children. Both state and federal funds have been used to expand the availability of immunization services, particularly for children in low-income families. Efforts are under way to improve parental awareness and motivation regarding immunizations and to develop computerized immunization tracking systems that can remind parents and health care professionals that immunizations are due. Although changes in assessment methods make it difficult to quantify the increase in immunization levels with precision, the immunization coverage of preschoolers has improved substantially since the epidemic.⁷

There is still room for improvement, however. Public and private health care sectors and other segments of the community must continue coordinated efforts to ensure that more infants and young children, especially economically disadvantaged minority children, receive immunizations and other preventive health care services in a timely manner. Health care professionals should view every medical visit by an infant or preschool-aged child as a possible opportunity to assess immunization status and to administer immunizations. Several investigations have shown that if medical care professionals aggressively make use of such opportunities, they can substantially improve immunization coverage.^{8,9}

Finally, the two-dose measles immunization schedule—given as combined measles-mumps-rubella, or MMR vaccine—recommended for all children by the United States Public Health Service Advisory Committee on Immunization Practices, the American Academy of Pediatrics, and the American Academy of Family Physicians deserves full implementation.¹⁰ Whereas single-dose

measles immunization is as much as 95% effective,¹¹ a 5% vaccine failure rate is still too high for a disease as infectious as measles. Even with this low vaccine failure rate and with a well-enforced school-entry requirement, one-dose measles immunization has been inadequate to prevent school measles outbreaks among the remaining susceptible pupils.¹² The accumulation of susceptible persons in a population resulting from this vaccine failure rate has also been associated with recurrent community-wide measles outbreaks.¹³ It should also be noted that during California's 1988-1991 measles epidemic, more than 3,500 cases occurred in school-aged children, almost half of whom had previously been immunized. In response to this problem, 40 other states have changed their school-entry measles immunization requirement from one to two doses. California should give serious consideration to doing the same.

If California is successful in immunizing at least 90% of its children against measles in their second year of life and in ensuring the receipt of a second dose of measles-containing vaccine by nearly all children through a school-entry immunization requirement, the devastating 1988-1991 measles epidemic could prove to be California's last one.

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Progress in Treatments for Substance-Impaired Physicians

THE PUBLICATION OF "Substance-Impaired Physicians—Probationary and Voluntary Treatment Programs Compared" by Nelson and colleagues in this issue of *THE WESTERN JOURNAL OF MEDICINE* highlights continuing progress in effective treatments for impaired physicians.¹ The comparison of probationary and voluntary groups in this study addresses critical public policy outcomes. These issues have been debated since changes in treatments for impaired physicians in the 1970s. The study focuses our attention on probationary treatment under a state board of medical examiners and compares it with voluntary treatment under an independent state physician health program. It assists us in refocusing on the important debate concerning protection of the public through coerced probationary treatment versus voluntary treatment that can occur at an earlier stage of intervention. We should pay close attention to the lessons here because they may guide us to more effective interventions that can save the health and careers of hundreds of physicians while safeguarding the public.

Since the 1970s, there has been considerable progress in developing and evaluating interventions for impaired physicians. Leadership has come from the American Medical Association, some state medical boards, and professional societies. In the West, model programs have been developed in Oregon, Washington, California, Arizona, and Colorado. The treatment method of contingency contracting is widely accepted. This method involves a patient consent agreement that links monitored drug abstinence to continued medical licensure. Another critical issue is a comprehensive assessment of impaired physicians to identify all comorbid medical and psychiatric disorders. Unfortunately, this goal is not accomplished in all programs; the tension between "addiction" and "psychiatric" treatments continues to inhibit comprehensive assessment and care in some treatment settings. To treat an addictive disorder without dealing with other possible complicating psychiatric conditions—for example, major depression—is short-sighted and ineffective. Despite these problems, treatment effectiveness for impaired physicians as reported in the outcome research is outstanding. It is 80% or above in several studies. Whereas special groups such as airline pilots and physicians cannot be compared with other patient groups because of the intensity of their monitored supervision, the success of some state board programs in combination with voluntary physician health programs provides stellar examples of both public accountability and humane treatment with vocational rehabilitation.

The Nelson study compared characteristics and treatment outcomes of substance-impaired physicians in Oregon. This is a retrospective, nonrandomized, clinical method comparing the cases of 97 physicians who were treated either in the state board probationary program or in a voluntary diversion program. Results were positive for both groups. The study identified a cohort effect with the voluntary diversion group, including a younger group